## CLAIMS

1. A powder processing method including the step of effecting a mechanical treatment on processing target powder for its activation by applying a mechanical force thereto;

wherein while effecting the mechanical treatment thereto, an excitement treatment is effected also on the processing target powder for providing an excitation energy thereto.

2. The powder processing method according to claim 1, wherein as said mechanical treatment, there is effected a milling treatment for milling the processing target powder by applying a compressive force and a shearing force thereto.

3. The powder processing method according to claim 1 or 2, wherein discharge plasma is employed as said excitation energy.

4. The powder processing method according to any one of claims 1-3, wherein during the mechanical treatment and the excitement treatment, said another substance is caused to come into contact with the processing target powder, so that said another substance is compounded with the processing target powder to obtain the compound powder.

5. The powder processing method according to claim 4, wherein said processing target powder comprises titanium oxide powder and said another substance comprises nitrogen element.

6. The powder processing method according to claim 5, wherein during the mechanical treatment and the excitement treatment, nitrogen gas or nitrogen compound is supplied to the titanium oxide powder,

so as to contact the nitrogen element with the titanium oxide powder, so that nitrogen-containing titanium oxide powder is manufactured as said compound powder.

7. The powder processing method according to any one of claims 4-6, wherein there is effected a heat treatment for heating the compound power to a range of temperature higher than or equal to its recrystallization temperature and lower than or equal to its critical temperature and then allowing the compound powder to be cooled to a room temperature.

8. A powder processing apparatus having an accumulating face on which the processing target powder is to be accumulated and a processing face disposed in opposition to the accumulating face and convexly curved, and

a moving means for moving the accumulating face and the processing face along the accumulating face relative to each other;

wherein as the processing face is moved along and relative to the accumulating face by the moving means, a compressive force and a shearing force are applied to the processing target powder at a gap between the accumulating face and the processing face, whereby the processing target powder is milled, and

the apparatus further comprises an excitement treatment means capable of applying an excitation energy to the processing target powder accumulated on the accumulating face from an excitation energy supplying portion disposed in opposition to the accumulating face.

9. The powder processing apparatus according to claim 8, wherein said excitation treatment means is configured to irradiate discharge plasma to the processing target powder as the excitation energy.

10. The powder processing apparatus according to claim 9, further comprising a magnetic field forming means for forming a magnetic field for delimiting an irradiation area of the discharge plasma onto the processing target powder

11. The powder processing apparatus according to any one of claims 8-10, wherein said excitation treatment means is configured to act as said excitation energy supplying portion for irradiating the excitation energy from said processing face onto the processing target powder.

12. The powder processing apparatus according to any one of claims 8-11, wherein

said accumulating face is formed in an inner face of a bottomed cylindrical container member;

said processing face is formed at the leading end of the processing member which projects from the side of a cylinder axis of the container member toward the side of the accumulating face; and

said moving means is configured to rotatably drive the container member about the cylinder axis thereof.

13. The powder processing apparatus according to claim 12, further comprising a decompressing means capable of decompressing the inside of a casing sealingly housing said container member and said processing member to a pressure below the atmospheric pressure.

14. The powder processing apparatus according to claim 12 or 13, further comprising a gas supplying means capable of supplying a predetermining processing gas to the inside of the casing sealingly housing the container member and the processing member.

15. The powder processing apparatus according to any one of claims 8-14, further comprising oscillating means for oscillating said accumulating face and said processing face along a direction intersecting said accumulating face.

16. A powder processing apparatus including: an accumulating face on which processing target powder is to be accumulated and a processing face disposed in opposition to the accumulating face and convexly curved, and

a moving means for moving the accumulating face and the processing face along the accumulating face relative to each other;

wherein the apparatus comprises oscillating means for oscillating said accumulating face or said processing face along a direction intersecting said accumulating face.

17. The powder processing apparatus according to claim 15 or 16, further comprising a crushing portion disposed rearwardly of the processing face relative to the direction of the relative movement of the processing face by said moving means and projecting more toward the accumulating face than the processing face.

18. The powder processing apparatus according to any one of claims 15-17,wherein said oscillating means is configured to allow for adjustment of oscillation frequency of the accumulating face or the processing face, thereby to adjust the magnitude of the shearing force to be applied to the processing target powder at the gap between the accumulating face and the processing face.

19. The powder processing apparatus according to any one of

claims 15-18, wherein

said accumulating face is formed in an inner face of a bottomed cylindrical container member;

said processing face is formed at the leading end of the processing member which projects from the side of a cylinder axis of the container member toward the side of the accumulating face;

said moving means is configured to rotatably drive the container member about the cylinder axis thereof; and

said oscillating means comprises means for oscillating the processing member in a direction intersecting the accumulating face.

20. A method of manufacturing porous granulated substance comprised of coagulation of a processing target powder and having a number of pores, comprising the steps of:

moving an accumulating face on which processing target powder is to be accumulated and a processing face disposed in opposition to the accumulating face and convexly curved, relative to each other along the accumulating face; and oscillating said accumulating face or said processing face along a direction intersecting said accumulating face, thus applying a compressive force to the processing target powder at a gap formed between said accumulating face and said processing face, thereby to obtain the porous granulated substance.

21. The porous granulated substance manufacturing method according to claim 20, further comprising the step of moving a crushing portion together with the processing face relative to the accumulating face, thereby to crush the porous granulated substance accumulated on the accumulating face, said crushing portion disposed rearwardly of the processing face relative to the direction of the relative movement of the processing face and projecting more toward the accumulating face than the

processing face.

22. The porous granulated substance manufacturing method according to claim 20 or 21, wherein the processing target powder constituting the porous granulated substance has an average particle diameter of 1 $\mu$m or less and the pores formed in the porous granulated substance have an average diameter of 100 nm or less.